

**Laboratory Report Number:** L13101613

Mark Lyon  
Environmental Waste Solutions  
2440 Louisiana Blvd  
Albuquerque, NM 87110

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:  
Stephanie Mossburg – Team Chemist/Data Specialist  
(740) 373-4071  
Stephanie.Mossburg@microbac.com

*I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.*

This report was certified on November 08 2013



David Vandenberg – Managing Director

State of Origin: NM  
Accrediting Authority: N/A ID:N/A  
QAPP: DOD Ver 4.1 without flagging



## Record of Sample Receipt and Inspection

### Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution
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### Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00110996	H	0.0		1002239513610004575000804334337639	X
0018253	H	0.0		1015923813610004575000796995957600	X

### Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

**Lab Report #:** L13101613

**Lab Project #:** 3005.011

**Project Name:** White Sands MR

**Lab Contact:** Stephanie Mossburg

**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
HTA 32-1013-1	L13101613-01	10/24/2013 12:45	10/25/2013 10:24



**Login Number:** L13101613  
**Department:** General Chromatography  
**Analyst:** John W. Richards Jr.

## METHOD

**Analysis** SW-846 6850

## HOLDING TIMES

**Sample Preparation:** All holding times were met.

**Sample Analysis:** All holding times were met.

## PREPARATION

Sample preparation proceeded normally.

## CALIBRATION

**Initial Calibration:** For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

**Alternate Source Standards:** All acceptance criteria were met.

**Continuing Calibration and Tune:** All acceptance criteria were met.

## BATCH QA/QC

**Method Blank:** All acceptance criteria were met.

**Laboratory Control Sample:** All acceptance criteria were met.

**Matrix Spikes:** The MS/MSD results were not associated with this sample delivery group.

## SAMPLES

**Samples:** Sample 01 was analyzed at a dilution based on screening results.

**Internal Standards:** All acceptance criteria were met.

## Manual Integration Reason Codes

**Reason #1: Data System Fails to Select Correct Peak** In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

**Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak** This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low area counts for the target compound.

**Reason #3: Improperly Integrated Isomers and/or coeluting compounds.** This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

**Reason #4: System Establishes Incorrect Baseline** There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

**Reason #5: Miscellaneous** Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

**Narrative ID:** 74086

**Approved By:** Mike Cochran





**Login Number:** L13101613  
**Department:** General Chromatography  
**Analyst:** Eric Lawson

## METHOD

**Analysis** SW-846 8330

## HOLDING TIMES

**Sample Preparation:** All holding times were met.

**Sample Analysis:** All holding times were met.

## PREPARATION

Sample preparation proceeded normally.

## CALIBRATION

**Initial Calibration:** For all compounds that yielded a %RSD greater than 15%, linear or higher order equations were applied. All acceptance criteria were met.

**Alternate Source Standards:** All acceptance criteria were met.

**Continuing Calibration and Tune:** All acceptance criteria were met.

## BATCH QA/QC

**Method Blank:** All acceptance criteria were met.

**Laboratory Control Sample:** All acceptance criteria were met.

**Matrix Spikes:** The MS/MSD results were not associated with this sample delivery group.

## SAMPLES

**Samples:** All acceptance criteria were met.

**Surrogates:** All acceptance criteria were met.

## Manual Integration Reason Codes

**Reason #1: Data System Fails to Select Correct Peak** In some cases the chromatography system selects and integrates the 'wrong peak'. In this case the analyst must correct the selection and force the system to integrate the proper peak. Other times the system may miss the peak completely.

**Reason #2: Data System Splits the Peak Incorrectly or Integrates a False Peak as a Rider Peak** This phenomena is common at low concentrations where the signal:noise ratio is low. A single compound (peak) is incorrectly split into multiple peaks or integrated as a main peak with one or more rider peaks resulting in low areacounts for the target compound.

**Reason #3: Improperly Integrated Isomers and/or coeluting compounds.** This system often fails to distinguish coeluting compounds and or isomers. The integration areas and concentrations are wrong, and they must be corrected by manual integration. Prime examples are benzo(k)fluoranthene and benzo(b)fluoranthene which are often unresolved and integrated improperly when both are present at low concentrations in standards or samples.

**Reason #4: System Establishes Incorrect Baseline** There are numerous situations in chromatography where the system establishes the baseline incorrectly. Some baseline errors will be obvious to the analyst and should be corrected via manual procedures.

**Reason #5: Miscellaneous** Other situations involving integration errors may require in-depth review and technical judgment. These cases should be brought to the attention of the laboratory management. If the form of manual integration is not clearly covered by these four cases, then review and approval by the Laboratory Director or the QA/QC Supervisor will be required.

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**Narrative ID:** 74019

**Approved By:** Mike Cochran





**Login Number:** L13101613  
**Department:** Conventionals  
**Analyst:** Brice Fenton

## METHOD

**Analysis** EPA 353.2/SM4500-NO3 F (Nitrate)

## HOLDING TIMES

**Sample Analysis:** The instrument used for the analysis of nitrate only analyzes for nitrate-nitrite (NO<sub>3</sub>NO<sub>2</sub>) which is the amount of total nitrate (NO<sub>3</sub>) and nitrite (NO<sub>2</sub>) combined. The NO<sub>3</sub> concentration is determined by analyzing for NO<sub>3</sub>NO<sub>2</sub> and NO<sub>2</sub> and calculating NO<sub>3</sub> by the difference. An unpreserved bottle only has a 48 hour hold time for NO<sub>3</sub> and NO<sub>2</sub> separately. However if the bottle is preserved with sulfuric acid, the hold time for NO<sub>3</sub>NO<sub>2</sub> is 28 days. The NO<sub>2</sub> was analyzed within 48 hours. The NO<sub>3</sub>NO<sub>2</sub> was analyzed from a preserved container within 28 days..

## PREPARATION

Sample preparation proceeded normally.

## BATCH QA/QC

**Method Blank:** All acceptance criteria were met.

**Laboratory Control Sample:** All acceptance criteria were met.

**Matrix Spikes:** All acceptance criteria were met.

**Duplicates:** All acceptance criteria were met.

## SAMPLES

**Samples:** All acceptance criteria were met.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

**Narrative ID:** 73794  
**Approved By:** Deanna Hesson



*Dannat/sson*

## Certificate of Analysis

<b>Sample #:</b> L13101613-01	<b>PrePrep Method:</b> N/A	<b>Instrument:</b> LCMS1
<b>Client ID:</b> HTA 32-1013-1	<b>Prep Method:</b> 6850	<b>Prep Date:</b> 11/05/2013 20:30
<b>Matrix:</b> Water	<b>Analytical Method:</b> 6850	<b>Cal Date:</b> 11/06/2013 00:54
<b>Workgroup #:</b> WG451629	<b>Analyst:</b> JWR	<b>Run Date:</b> 11/06/2013 08:48
<b>Collect Date:</b> 10/24/2013 12:45	<b>Dilution:</b> 100	<b>File ID:</b> 1LM.LM22540
<b>Sample Tag:</b> DL01	<b>Units:</b> ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD
Perchlorate	14797-73-0	542		20.0	10.0

<b>Sample #:</b> L13101613-01	<b>PrePrep Method:</b> N/A	<b>Instrument:</b> HPLC4
<b>Client ID:</b> HTA 32-1013-1	<b>Prep Method:</b> METHOD	<b>Prep Date:</b> 10/29/2013 09:30
<b>Matrix:</b> Water	<b>Analytical Method:</b> 8330B	<b>Cal Date:</b> 11/15/2012 15:04
<b>Workgroup #:</b> WG450700	<b>Analyst:</b> ECL	<b>Run Date:</b> 10/30/2013 05:59
<b>Collect Date:</b> 10/24/2013 12:45	<b>Dilution:</b> 1	<b>File ID:</b> 4L025791.F
<b>Sample Tag:</b> 02	<b>Units:</b> ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD
PETN	78-11-5		U	1.00	0.250
U	Analyte was not detected. The concentration is below the reported LOD.				

## Certificate of Analysis

<b>Sample #:</b> L13101613-01	<b>PrePrep Method:</b> N/A	<b>Instrument:</b> HPLC5
<b>Client ID:</b> HTA 32-1013-1	<b>Prep Method:</b> METHOD	<b>Prep Date:</b> 10/29/2013 09:30
<b>Matrix:</b> Water	<b>Analytical Method:</b> 8330B	<b>Cal Date:</b> 08/31/2013 03:44
<b>Workgroup #:</b> WG450700	<b>Analyst:</b> ECL	<b>Run Date:</b> 11/01/2013 07:49
<b>Collect Date:</b> 10/24/2013 12:45	<b>Dilution:</b> 1	<b>File ID:</b> 5L011508.F
<b>Sample Tag:</b> 01	<b>Units:</b> ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD
1,3,5-Trinitrobenzene	99-35-4		U	1.00	0.250
1,3-Dinitrobenzene	99-65-0		U	1.00	0.250
2,4,6-Trinitrotoluene	118-96-7		U	1.00	0.250
2,4-Dinitrotoluene	121-14-2		U	1.00	0.250
2,6-Dinitrotoluene	606-20-2		U	1.00	0.250
2-Amino-4,6-dinitrotoluene	35572-78-2		U	1.00	0.250
2-Nitrotoluene	88-72-2		U	1.00	0.250
3-Nitrotoluene	99-08-1		U	1.00	0.250
4-Nitrotoluene	99-99-0		U	1.00	0.250
4-Amino-2,6-dinitrotoluene	19406-51-0		U	1.00	0.250
HMX	2691-41-0		U	1.00	0.250
Nitrobenzene	98-95-3		U	1.00	0.250
RDX	121-82-4		U	1.00	0.250
Tetryl	479-45-8		U	1.00	0.250
Nitroglycerin	55-63-0		U	1.00	0.250
Surrogate	Recovery	Lower Limit	Upper Limit	Q	
1,2-Dinitrobenzene	92.5	50	150		
U	Analyte was not detected. The concentration is below the reported LOD.				

### Certificate of Analysis

<b>Sample #:</b> L13101613-01	<b>PrePrep Method:</b> N/A	<b>Instrument:</b> SMARTCHEM
<b>Client ID:</b> HTA 32-1013-1	<b>Prep Method:</b> 353.2	<b>Prep Date:</b> N/A
<b>Matrix:</b> Water	<b>Analytical Method:</b> 353.2	<b>Cal Date:</b> 10/29/2013 14:17
<b>Workgroup #:</b> WG450787	<b>Analyst:</b> BAF	<b>Run Date:</b> 10/30/2013 14:30
<b>Collect Date:</b> 10/24/2013 12:45	<b>Dilution:</b> 8	<b>File ID:</b> SC13103112243601
<b>Sample Tag:</b>	<b>Units:</b> mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD
Nitrate-Nitrite (as N)		9.78		0.400	0.200

Microbac Laboratories Inc.  
Ohio Valley Division Analyst List  
November 8, 2013

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001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
AJF - AMANDA J. FICKIESEN	AML - TONY M. LONG
AZH - AFTER HOURS	BAF - BRICE A. FENTON
BLG - BRENDA L. GREENWALT	BRG - BRENDA R. GREGORY
CAA - CASSIE A. AUGENSTEIN	CAF - CHERYL A. FLOWERS
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CLW - CHARISSA L. WINTERS
CPD - CHAD P. DAVIS	CRW - CHRISTINA R. WILSON
CSH - CHRIS S. HILL	CTB - CHRIS T. BUCINA
DAK - DEAN A. K	DCM - DAVID C. MERCKLE
DDE - DEBRA D. ELLIOTT	DEV - DAVID E. VANDENBERG
DIH - DEANNA I. HESSON	DLB - DAVID L. BUMGARNER
DLP - DOROTHY L. PAYNE	DLR - DIANNA L. RAUCH
DSM - DAVID S. MOSSOR	ECL - ERIC C. LAWSON
EDL - ERIN D. LONG	ENY - EMILY N. YOAK
EPT - ETHAN P. TIDD	ERP - ERIN R. PORTER
FJB - FRANCES J. BOLDEN	HJR - HOLLY J. REED
JBK - JEREMY B. KINNEY	JDH - JUSTIN D. HESSON
JKS - JANE K. SCHAAD	JLL - JOHN L. LENT
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KDW - KATHRYN D. WELCH
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KRA - KATHY R. ALBERTSON	KRB - KAELY R. BECKER
KSC - KELLY S. CUNNINGHAM	LKN - LINDA K. NEDEFF
LLS - LARRY L. STEPHENS	LSB - LESLIE S. BUCINA
MBK - MORGAN B. KNOWLTON	MDA - MIKE D. ALBERTSON
MDC - MIKE D. COCHRAN	MES - MARY E. SCHILLING
MLW - MATTHEW L. WARREN	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	MSW - MATT S. WILSON
PDM - PIERCE D. MORRIS	PIT - MICROBAC WARRENDALE
PSW - PEGGY S. WEBB	QX - QIN XU
RAH - ROY A. HALSTEAD	REK - BOB E. KYER
RLB - BOB BUCHANAN	RM - RAYMOND MALEKE
RNP - RICK N. PETTY	RS - ROSEMARY SCOTT
RWC - RODNEY W. CAMPBELL	SAV - SARAH A. VANDENBERG
SEP - SUZANNE J. PAUGH	SLM - STEPHANIE L. MOSSBURG
SLP - SHERI L. PFALZGRAF	TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS	TPA - TYLER P. AMRINE
VC - VICKI COLLIER	WJB - WILL J. BEASLEY
WTD - WADE T. DELONG	XXX - UNAVAILABLE OR SUBCONTRACT

November 08, 2013

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
FL	Free Liquid
H1	Sample analysis performed past holding time.
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL/MDL).
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, H1	Not detected; Sample analysis performed past holding time.
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
TIC	Library Search Compound
TNTC	Too numerous to count
U	Analyte was not detected. The concentration is below the reported LOD.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



Marietta, OH 45750

# Microbac

Phone: 740-373-4071

**Fax: 740-373-4835**

## CHAIN-OF-CUSTODY RECORD

[illegible]

\*Water (W), Soil (S), Solid Waste (SD), Unknown (X)

## Internal Chain of Custody Report

Login: L13101613

Account: 3005

Project: 3005.011

Samples: 1

Due Date: 05-NOV-2013

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L13101613-01	268415	8330-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	25-OCT-2013 12:12	CLS		
2	PREP	W1	EXT	29-OCT-2013 09:29	CSH	RS	
3	ANALYZ*	EXT	SEMI	30-OCT-2013 17:11	JWR	CSH	

*\*Sample extract/digestate/leachate*

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	25-OCT-2013 12:12	CLS		
2	STORE	W1	A1	28-OCT-2013 11:26	RS	RS	

*\*Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L13101613-01	268416	6850

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	25-OCT-2013 12:12	CLS		
2	ANALYZ	W1	SEM	05-NOV-2013 15:46	JWR	RS	
3	STORE	SEM	A1	07-NOV-2013 10:24	CLS	JWR	

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L13101613-01	268417	NO3NO2

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	25-OCT-2013 12:12	CLS		
2	ANALYZ	W1	WET	30-OCT-2013 11:51	BAF	RS	
3	STORE	WET	A1	30-OCT-2013 16:22	RS	DCM	

A1 - Sample Archive (COLD)  
 A2 - Sample Archive (AMBIENT)  
 F1 - Volatiles Freezer in Login  
 V1 - Volatiles Refrigerator in Login  
 W1 - Walkin Cooler in Login

